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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,946	07/30/2003	Reinhard M. Klaass	H0004821	1773

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Honeywell International, Inc.
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EXAMINER

NGUYEN, NINH H

ART UNIT PAPER NUMBER

3745

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/631,946

Applicant(s)

KLAASS ET AL.

Examiner

Ninh H. Nguyen

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-28 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 7, 8, 16, 29 and 30 is/are rejected.
- 7) ☒ Claim(s) 3-6 and 9-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>07/30/03</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 29 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Stein (4,082,296).

Stein discloses a hydrodynamic carbon bearing/seal (Figs. 1-17) comprising a circular U-shaped substrate 24, 32 (Fig. 1); a plurality of carbon segments 8 (col. 7, lines 6-9) arranged circumferentially in the substrate; an axial preload spring 26 providing a resilient force on each of the plurality of carbon segments in an axial direction; a spring 20 providing a resilient force on each of the plurality of carbon segments in a radial direction, pressing the plurality of carbon segments into contact with the first rotor when the rotor is in a non-operational state; and a rotor contacting face of each of the plurality of carbon segments designed to create a force opposite that of the spring when the first rotor is rotated, thereby creating the hydrodynamic carbon bearing/seal;

wherein the hydrodynamic carbon bearing/seal further comprising a plurality of notches (Fig. 1) in the plurality of carbon bearing segments; a corresponding plurality of substrate notches in the substrate; and anti-rotation pins 44 having a first end fitting in the plurality of notches and a second end fitting in the corresponding plurality of substrate notches, thereby preventing rotation of the plurality of carbon bearing segments without the corresponding rotation of the substrate (col. 3, lines 2-6).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 7, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glaser et al. (4,725,206) in view of Stein.

Glaser discloses a rotor (Fig. 1) comprising a first rotor 12; an air foil bearing 20 supporting a first end of the first rotor; and a labyrinth seal 34 sealing a bearing compartment of the air foil bearing;

wherein the first rotor includes a first rotor and a second rotor 14 further comprising a second air foil bearing 20 supporting a first end of the second rotor; and labyrinth seal 32 providing sealing to a bearing compartment of the second air foil bearing.

However, Glaser does not disclose the seals 32 and 34 being hydrodynamic carbon bearing/seals as claimed.

Stein teaches a seal for sealing between a rotating member and a housing wherein the seal is a hydrodynamic bearing/seal comprising a circular U-shaped substrate 24, 32 (Fig. 1); a plurality of carbon segments 8 (col. 7, lines 6-9) arranged circumferentially in the substrate; an axial preload spring 26 providing a resilient force on each of the plurality of carbon segments in an axial direction; a spring 20 providing a resilient force on each of the plurality of carbon segments in a radial direction, pressing the plurality of carbon segments into contact with the first rotor when the rotor is in a non-operational state; and a rotor contacting face of each of the

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plurality of carbon segments designed to create a force opposite that of the spring when the first rotor is rotated, thereby creating the hydrodynamic carbon bearing/seal.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made, to make the rotor of Glaser with the labyrinth seals being hydrodynamic carbon bearing/seals of Stein for the purpose of providing better sealing for the shaft of the rotors as taught by Stein (col. 1, lines 6-60).

3. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glaser et al. in view of Stein.

Glaser in view of Stein discloses all the limitations except the hydrodynamic carbon bearing/seal is not designed integrally with the airfoil bearing as claimed.

Since the applicant has not disclosed that having the hydrodynamic carbon bearing/seal integrally designed with the air foil bearing solves any stated problem or is for any particular purpose above the fact that the hydrodynamic carbon bearing/seal provide support and sealing for the airfoil bearing housing, and it appears that the seal of the modified Glaser would perform equally well when designed integrally with the air foil bearing as defined claimed by applicant, it would have been an obvious matter of design choice to modify the airfoil and hydrodynamic carbon seal of the modified Glaser by utilizing the specific design as claimed.

Allowable Subject Matter

4. Claims 17-28, due to the limitation of the an electrical machine having an air foil bearing and a hydrodynamic carbon bearing/seal, allowed.

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5. Claims 3-6, and 14, due to the limitation of the an electrical machine having an air foil bearing and a hydrodynamic carbon bearing/seal, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 9-11, and 15, due to the limitation of a second electric machine, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 12 and 13, due to the limitation of a magnetic thrust bearing, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art

The prior art made of record but not relied upon is considered pertinent to applicant's disclosure and consists of 2 patents.

Geary, Jr. (4,406,466) and Lahrman (5,174,584) are cited to show hydrodynamic bearing/seal for rotors.

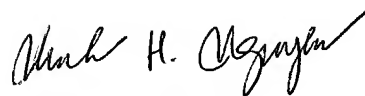
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ninh Nguyen whose telephone number is (703) 305-0061 or (571) 272-4823 after November 18, 2004. The examiner can be normally reached on Monday-Friday from 7:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached at (703) 308-1044 or (571) 272-4820 after November 18, 2004. The fax number for this group is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.



**NINH H. NGUYEN
PRIMARY EXAMINER**

Nhn
October 13, 2004